T-Pro Auto 12t System

-Automated Nucleic Acid Purification System-

Instruction Manual

JZ89-S001

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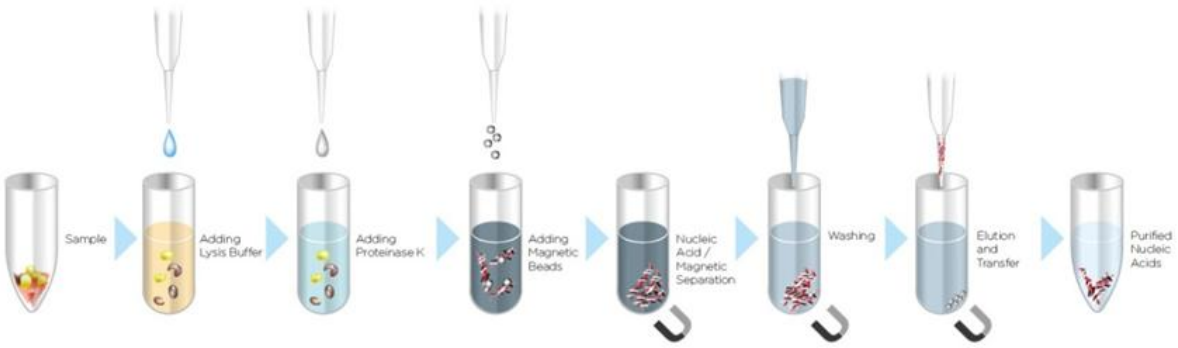
INTRODUCTION

Thank you for purchase of the T-Pro Auto 12t system which is a fully automated, standalone robot that can purify nucleic acids within 30-45 minutes. With advanced magnetic bead separation technology, it enables you to have high quality extraction results. Moreover, the most user-friendly interface makes users free from troublesome parameter settings and maintenance.

This guide contains important information regarding the safe use of the T-Pro Auto 12t system. Please read this manual carefully before you start to run the system at the first time, especially for Safety Information.

If there is any question about how to install or operate it, please contact our certified distributors / agents or email to our technical support center (sales@tprobio.com).

T-Pro FastEZ Purix Magnetic Bead Purification Process



SAFFETY INFORMATION

The meanings of safety precaution marks are as follows:

⚠ **WARNING:**

"WARNING" indicates a dangerous condition that may lead to death or serious injury.

⚠ **BIOHAZARD:**

"BIOHAZARD" indicates exposure to a biological agent or condition that may be infectious or harmful.

⚠ **CAUTION:**

"CAUTION" indicates the possibility of danger that may lead to minor or moderate personal injury.

"CAUTION" may also indicate an accident of property damage.

Important:

"Important" shows the important notes for usage, as well as prohibited actions.

Note:

"Note" indicates the notes, procedures that should be obeyed and supplementary information for use.

For your safety and that of others, follow the guidelines provided in the following pages concerning the use of the T-Pro Auto 12t system.

About Instrument

⚠ WARNING:

- Ignoring the following notations may lead to fire or electric shock.
  - In countries other than Taiwan, US and Canada, use a power cable that meets your country's standard, or contact your local distributor.
  - Use the AC adapter provided.
  - Do not use the T-Pro Auto 12t system with voltage other than the voltage specified on the device.
  - Do not overload the power outlet with too many devices.
  - Do not use the T-Pro Auto 12t system with a damaged power plug or a loose socket.
  - If there is dust on the prongs of the power plug or on the plug socket, remove it with a dry cloth.
  - When you disconnect the plug from the outlet, be sure to hold the power plug itself. Do not pull the power cable.
  - For maintenance, disconnect the power plug from the outlet.
  - Do not touch the power plug when you hear the crash of thunder.
- Do not pour any liquid on the T-Pro Auto 12t system.
- Do not place any objects containing liquid on the T-Pro Auto 12t system. Doing so may cause a device failure, fire, or electric shock.
- In the event the device overheats, starts to smoke or smells strange, immediately unplug the power cable.

⚠ CAUTION:

- Never attempt to remodel the T-Pro Auto 12t system without the manufacturer's permission. Doing so may cause fire or electric shock.
- Do not place or drop objects on the T-Pro Auto 12t system. Also refrain from bumping or knocking it, as doing so may cause a failure or malfunction of the T-Pro Auto 12t system.

- If any liquid materials are left inside the device, wipe it up a soft paper tissue, etc. Otherwise, the T-Pro Auto 12t system may be damaged.
- Repairs to the T-Pro Auto 12t system should only be performed by such agencies as are specifically authorized by the Ji-Feng Biotechnology CO., LTD.
- Only original the Ji-Feng Biotechnology CO., LTD. replacement parts should be used.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

About Reagent Kits

⚠ **CAUTION:**

- When handling any of the kits, refer to the respective handbook.
- Reagents in each kit should be handled by observing the safety information and precautions regarding the kit.
- Extraction should be performed in an appropriate laboratory or workplace.

Note:

The kits are not supplied with the T-Pro Auto 12t system. Select the desired kit(s) and order it (them) separately.

About Samples

⚠ **BIOHAZARD:**

- Always wear appropriate gloves, a mask, and safety goggles etc. when handling any infectious samples.

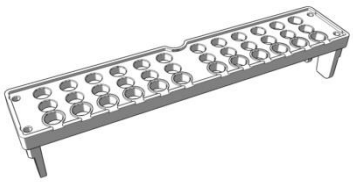
About Infectious Wastes

- When handling or disposing of infectious materials, follow the laboratory guideline or the law regarding infectious waste to perform proper incineration, fusion, sterilization, and/or disinfection.
- When you use a third party to dispose of it, outsource this work an operator licensed to handle medical waste subject to special control, and give them the manifest of the medical waste at the same time.

1 Installation

1.1 Composition of the T-Pro Auto 12t system

Check that the following are included in the package. Contact your local representative if you notice any missing part(s).

A	B
C 	D
E	

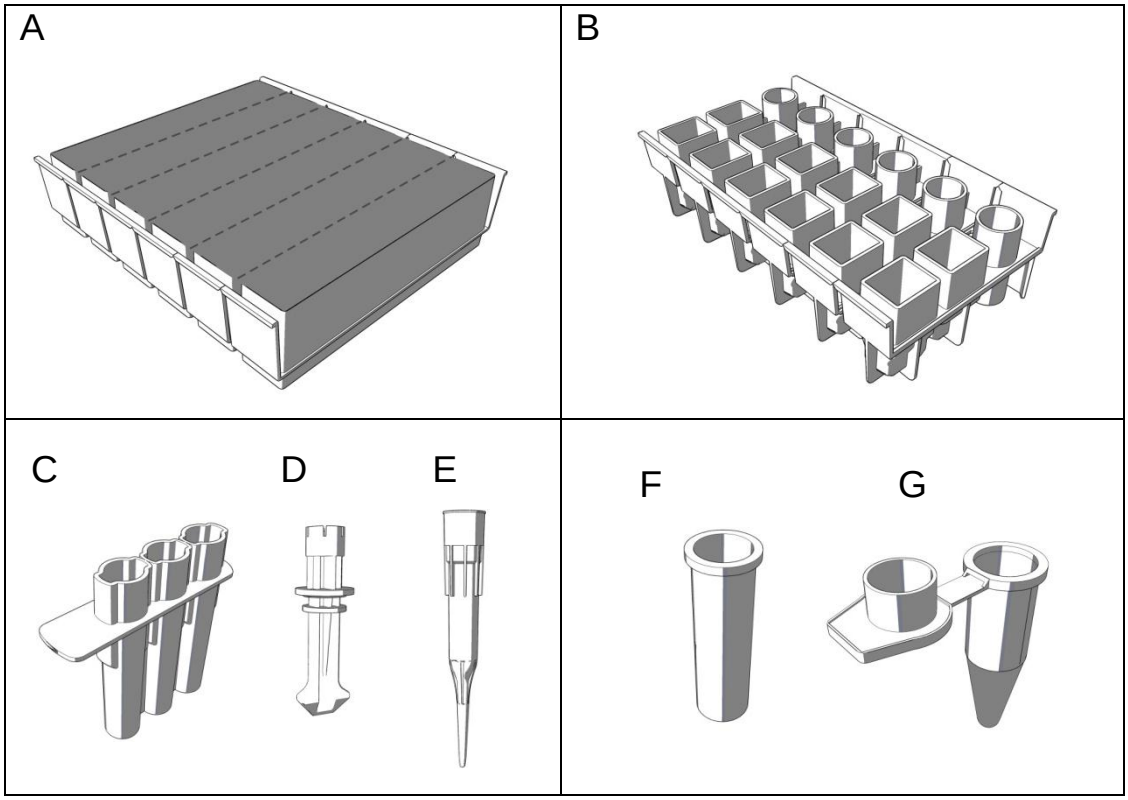
	Q'ty
A. T-Pro Auto 12t system Instrument	1
B. Power Cord	1
C. Sample Tube Rack	1
D. Barcode Reader	1
E. User's Manual	1

Please make all the components are free from damages as soon as you get the system. If any damage found, please contact your local representative for the instant support.

Note:

Ji-Feng's global warranty does not cover the damages from the transportation or improper operation.

1.2 Contents of Reagent Kits



A. Reagent Cartridge(s)

B. Reaction Chamber(s)

C. Tip Holder

D. Pestle (essential for some Kit types)

E. Filtered tip

F. Sample tube

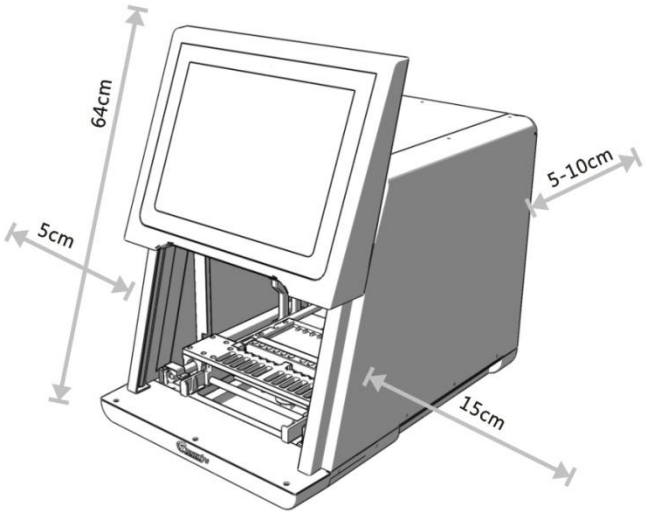
G. Elute tube

Note:

- Reagent kits are separated purchase. Please contact your local agents or representatives to get further info.
- The contents of reagent kits will be various. Refer to the handbook of kits enclosed in reagent box for details.

1.3 Operating Environment / Condition

Use the T-Pro Auto 12t system in a location that meets the following conditions:



- The space for the allocation of the T-Pro Auto 12t system system must be remained 5-10 cm from instrument to side walls.
- A location where power can be provided. Be sure to use the attached AC adapter.
- A location where the temperature is 15 to 30˚C, and humidity is 30 to 80%RH (non condensing)
- A location that is flat and stable, with no vibration
- A location away from direct sunlight (Block the sunlight by closing curtains or blinds as necessary.)
- A location which is well-ventilated and not dusty
- A location where the temperature does not go up and down

suddenly (Warming a cold room suddenly or moving the T-Pro Auto 12t system from a room with low temperature to a warm room may cause condensation inside the device, resulting in abnormal extraction.)

- A location where the temperature and humidity are kept within the specified range (far from water taps, water heaters, humidifiers, air-conditioners and heaters)
- A location far from objects which generate strong magnetic fields (motors, transformers, TV, audio speakers, magnets, etc.) (Bringing the T-Pro Auto 12t system close to any type of magnetic field may cause a malfunction.)

⚠ Warning:

Do not use the T-Pro Auto 12t system to a location where it is wet or can be splashed with water. It may cause a device failure, fire, or electric shock.

When relocating the T-Pro Auto 12t system, disconnect the plug from the outlet first. If the power cable is damaged, this may cause a device failure, fire, injury, or electric shock.

⚠ Caution:

Do not use the T-Pro Auto 12t system in an unstable place such as a slanted surface or a place subject to vibrations. It may cause injury or device failure.

Do not use the T-Pro Auto 12t system in direct sunlight or close to a heating device. It may shorten the life of the T-Pro Auto 12t system, or cause a trouble.

Operating Conditions

Items		**Conditions**
Temperature (°C)	**During operation**	**15 - 30**
	During down time	**0 - 55**
Humidity (RH)	**During operation**	**30 - 80**
	During down time	**10 - 80**

Max. wet bulb temperature (°C)	**During operation**	**29 (non condensing)**
	During down time	**29 (non condensing)**
Temperature gradient (°C/hr)		**12 or less (non condensing)**
Humidity gradient (RH/day)		**30 or less (non condensing)**
Altitude, operating (m)		**1600 or less**

1.4 Unpack the T-Pro Auto 12t system

(1) Open the packing box and take out the instrument and related accessories.

Important:

The T-Pro Auto 12t system has a weight of more than 45 kgs. It should be lift and moved by two persons.

Hold the moving handler of the instrument from two sides to move it out from the box.

- Do not hold the plastic outer covering.
- Do not hold the front panel.
- Do not hold the door.

⚠ **Caution:**

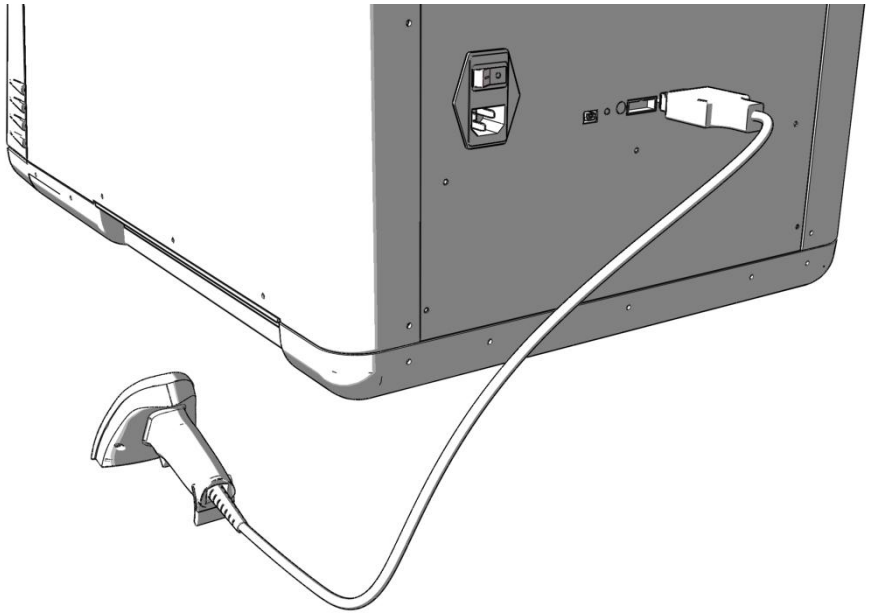
Improper handling of the movement of the T-Pro Auto 12t system will lead to instrument damages.

(2) For correct and safe use of T-Pro Auto 12t system, install it in a location that is close to electrical outlet and has enough space for installation and operation.

Important:

Keep the shipping box. They will be needed again when transporting the T-Pro Auto 12t system.

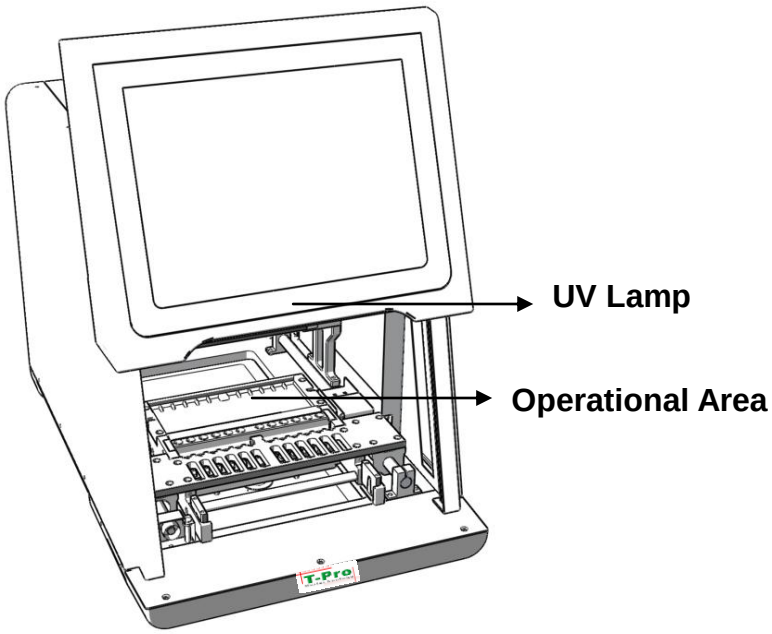
(3) Connect Barcode Reader with the Instrument.



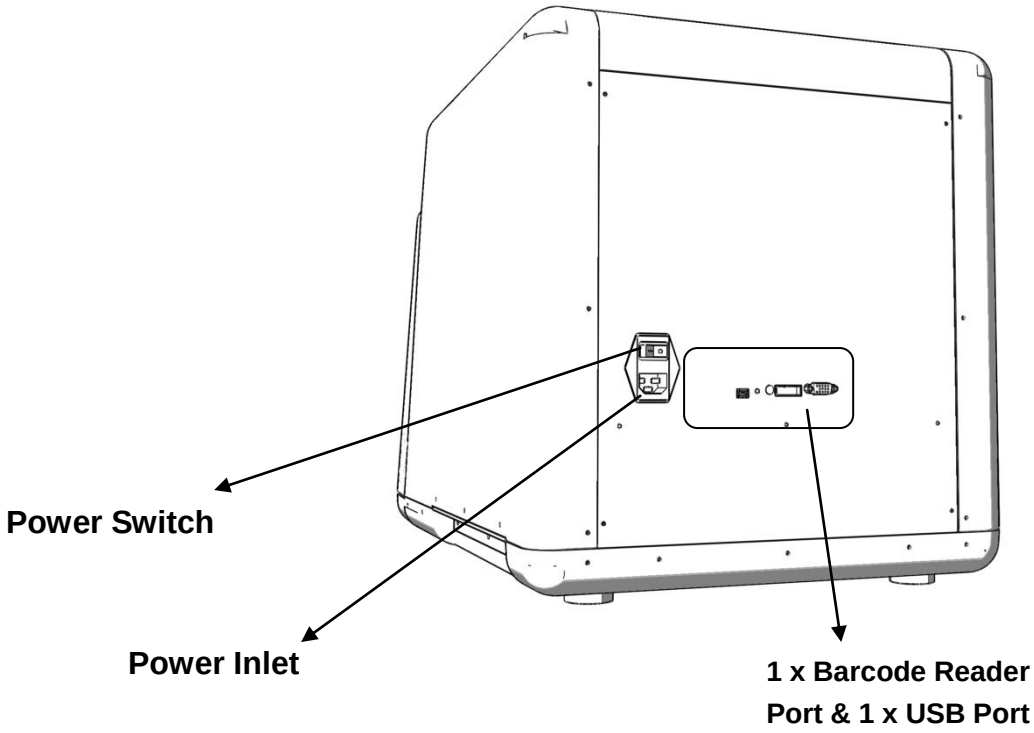
1.5 Overall View

- Front view with Sliding Door closed

- Front view with Sliding Door opened



- Back View



2 Getting Started

⚠ **Biohazard:**

Always wear appropriate gloves, a mask, and safety goggles during any biohazardous operations in extraction process. Even when touching the device after any operation with a biohazard risk, wear appropriate gloves and a mask since the device may be contaminated.

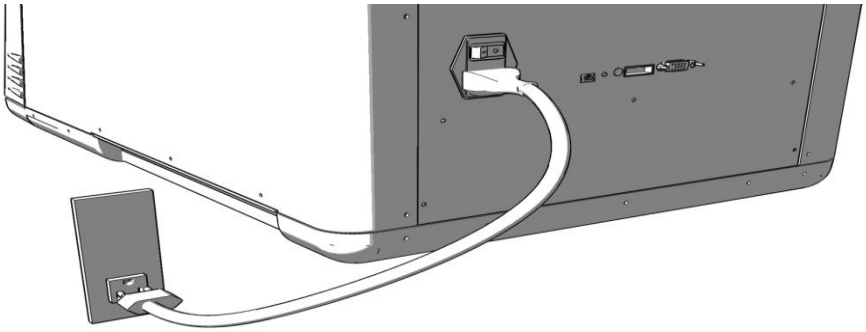
Important:

Before starting extraction, put on appropriate gloves, a mask, and safety goggles if required by the operation. In the operation from preparing samples to extraction completion, be careful not to contaminate the samples with sweat, saliva, etc.

2.1 Turning on the power

(1) Make sure that the power cable are connected securely to the the T-Pro Auto 12t system.

(2) Connect the plug of the power cable to the outlet.



2.2 Preparation

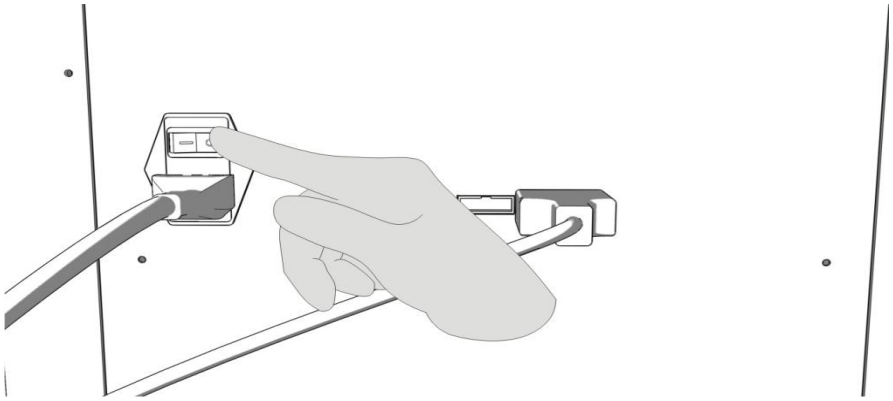
The following preparations are required for extraction operation.

- Items to be prepared
  - Gloves
  - Mask
  - Safety Goggles
  - Reagent Cartridge*
  - Reaction Chamber*
  - Tip Holder*
  - Pestle (Option)*
  - Filtered tip*
  - Sample tube*
  - Elute tube*
- For the preparation of samples, refer to the handbook of each kit.

*: Provided with the Reagent Kits.

2.3 Extraction

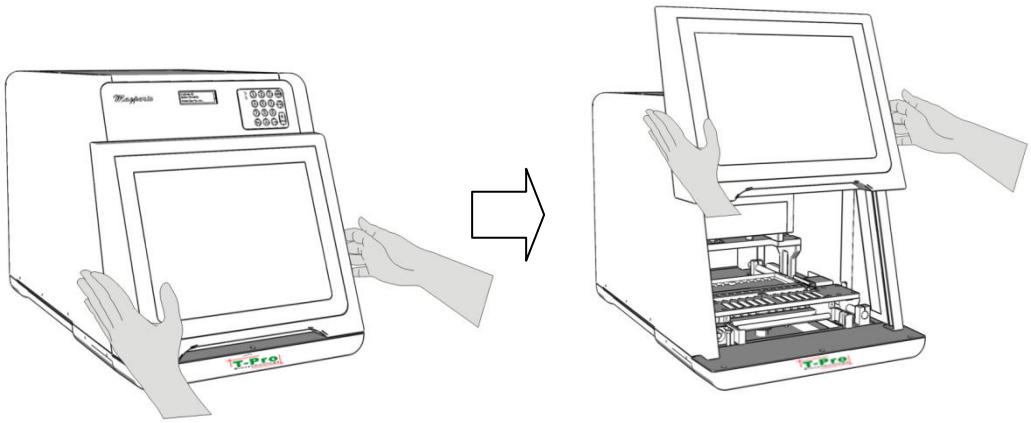
(1) Turn the power switch on (the system will process self-testing, and then go to steady mode)



Note:

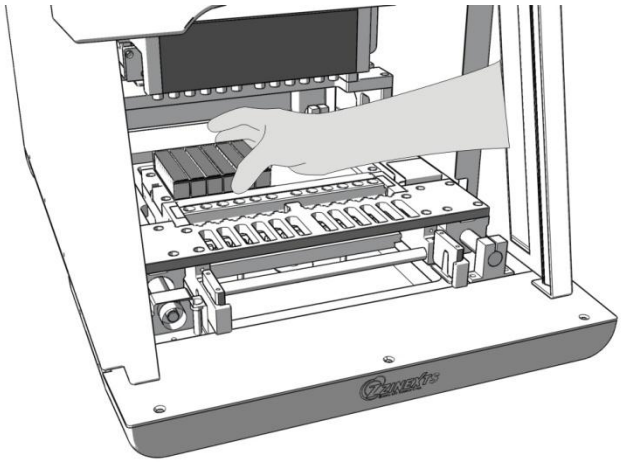
The system will block main functions before the completion of self-testing process.

(2) Open the sliding door and remove the sample rack from the instrument.



(3) Take out Reaction Cartridges, and all plastics disposables (Reaction Chamber, Tip Holder, Filtered Tip, Pestle, Sample Tube, Elute Tube) from the Reagent Kit box. You need one Reaction Cartridge and one set of plastic plastic disposables per sample.

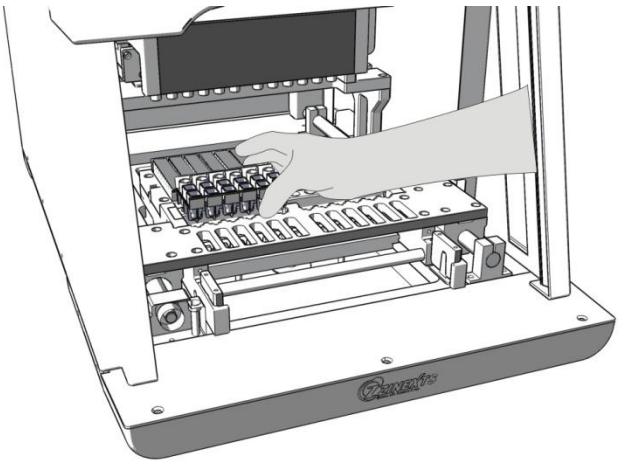
(4) Place reagent cartridges.



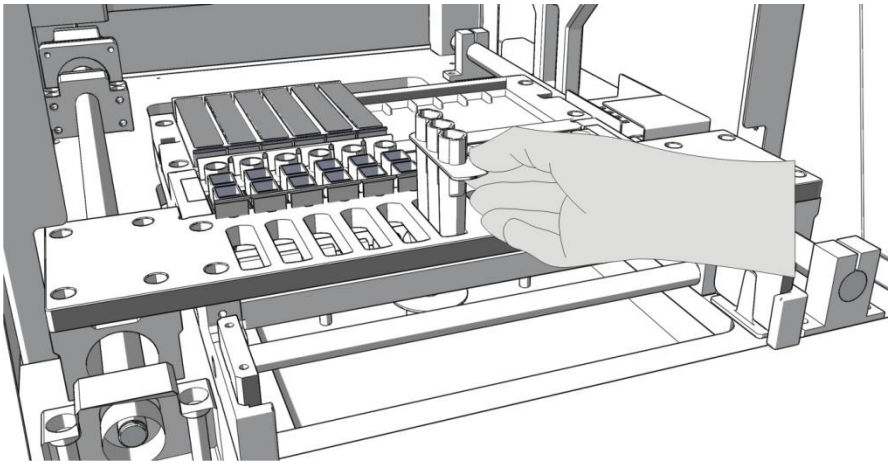
Important:

- Cartridge should be placed in a flat and stable table when setting up the Reagent Cartridge.
- Set Cartridges in the order of the number from left to right.
- Make sure that Cartridges are inserted in to the Cartridge Tray tightly. You will hear a click if the cartridge is placed correctly on the tray.
- You can load 1-12 cartridges on the tray depending on the number of samples that you wish to process.

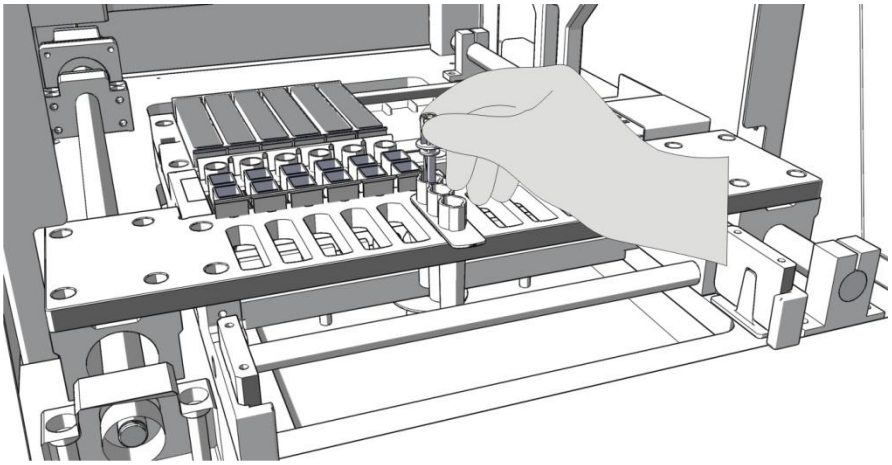
(5) Place Reaction Chamber(s)



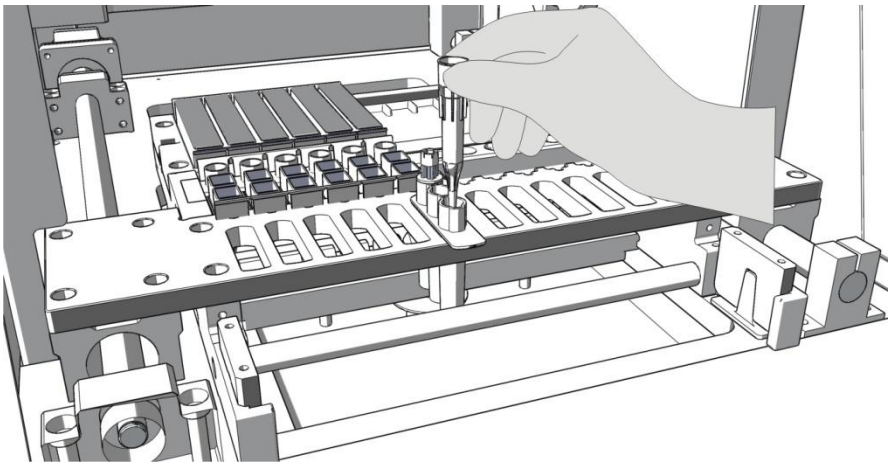
(6) Place Tip Holder(s)



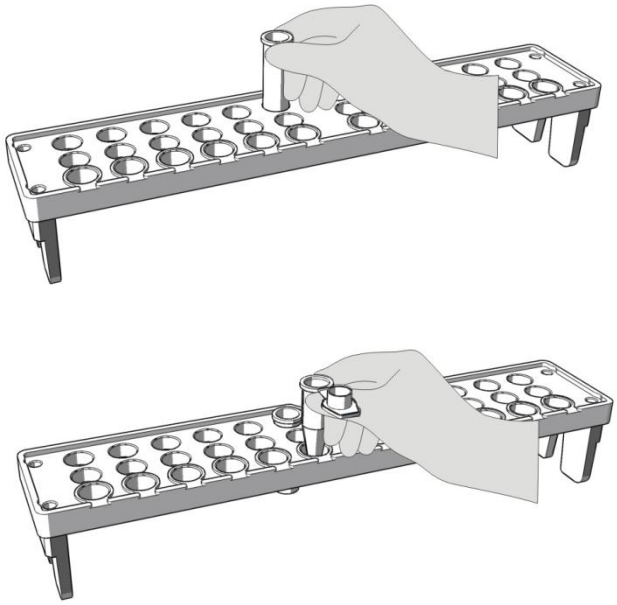
(7) Place the pestle(s) [required for some kit types]



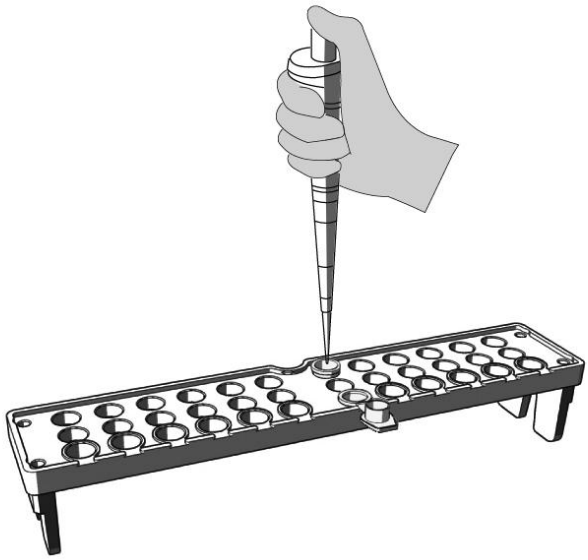
(8) Place the filtered tip(s)



(9) Place Sample Tube and Elute Tube to Sample Rack on the bench



(10) Load the sample(s) to Sample Tube

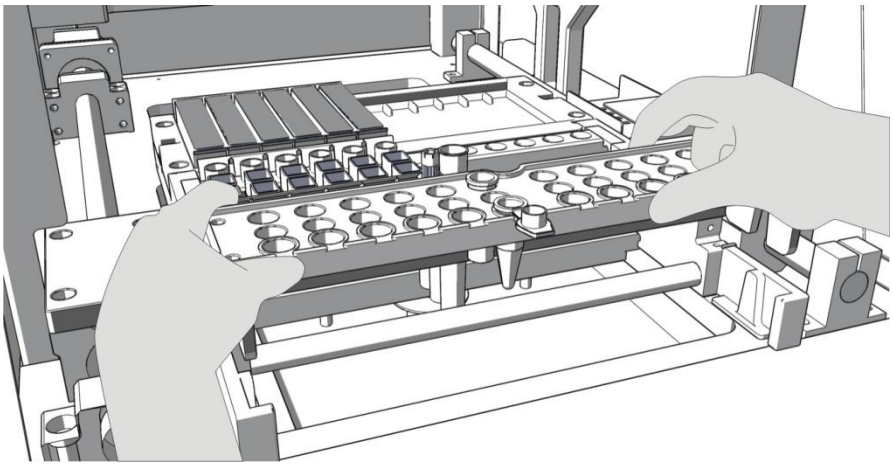


Note:

Pretreatments are essential for some sample types before loading to Sample Tube. Please refer to the handbook of reagent kits for details.

Make sure the caps of Elute Tube are open as the figure shown above.

(11) Place Sample Rack on the instrument platform



Note:

- Use two hands to handle the Sample Tray.
- Make sure the Sample Tray be placed correctly in the instrument

(12) Close the Sliding Door

(13) Scan the protocol barcodes to select purification protocol, sample volume and elute volume

Note:

- There is one protocol barcode paper enclosed in the reagent kit box.
- Protocol's name, sample volume and elution volume will be shown on LCD screen after protocol barcode is scanned.

(14) Follow the instructions displayed on LCD screen to double check the operating steps being completed before program running.

(15) Push "Enter" to confirm. Instrument will start to run the protocol program automatically until whole processes are completed.

Note:

- It takes from 30 to 45 minutes to complete the extraction according to reagent types. Find the detailed time consumption by checking the handbook of your reagent kits.

2.4 After Extraction Operation

(1) Take out the Elute Tubes (The extraction yields in them)

Note:

- You can apply quality checking or do downstream study or storage them as what you expect.

(2) Remove the Cartridges and plastic disposables from the instrument and then dispose of them.

3 Cleaning & Maintaining the T-Pro Auto 12t system

Two types of maintenance are performed on the the T-Pro Auto 12t system Instrument as listed in the table. For details on each type of maintenance, see below:

Maintenance Type	Performed by	Schedule
Routine		
■ **Cleaning of Sample Tray**	**User**	**After each use**
■ **Cleaning of instrument body (outside)**	**User**	**Bi-weekly**
■ **Cleaning of instrument body (inside)**	**User**	**Bi-weekly**
Preventive	**Service Engineer**	**Annually**

- Clean the Sample Tray with mild detergent and rinse with deionized water. Allow the parts to dry before use. Clean and disinfect the platform surface by wiping with deionized water followed by 70% ethanol.
- Clean the instrument body by removing dust gently with a dry, soft cloth. If the outside of the T-Pro Auto 12t system is heavily soiled, or if any samples that may cause infection are adhered to the outside of the the T-Pro Auto 12t system, wipe with a soft paper tissue, soaked with 0.5% sodium hypochlorite solution or ethanol.

4 Troubleshooting

Problem	Cause	Solution
Instrument Problems		
No power (the LCD Screen remains blank when the power is turned on)	AC power cord is not connected	Check AC power cord connections at both ends. or Use the correct cords.
LCD Screen turns on when the power is on but the self-testing program does not run	Forget to remove the packing stuff from instrument	Turn off the instrument and remove the packing stuff.
	Technical problem	Contact your local representative or agent
Protocol stops after an initial start	Cartridge(s), Plasticwares (Reaction Chamber, Tip Holder, Filtered Tip Pestle, Sample Tube, Elute Tube) incorrectly loaded on the the MagPurix 12 system	Turn off the power and then turn it on again to stop the program. The system will move back to initial state. Re-load them according to the instructions shown in this manual. Note: you could not resume the protocol after stop and you may lose your samples.
	Problem with motion sensors	Turn off the power and remove all samples and plasticwares. Contact your local representatives
Bubbles formed during extraction	Missed adding sample or sample volume is lower than the recommended volume	Be sure to add the sample to tubes prior to starting the protocol. To ensure proper mixing of reagents in the tip and prevent bubble formation during mixing, make sure the sample volume is at least the recommended volume listed in the handbook supplied with the MagPurix Reagent Kits.
Presence of buffer in the Cartridge Tray	Motor movements may not be smooth, incorrect placement of plasticware, or leakage from tips	Perform preventive maintenance annually to ensure proper motor movements.
Leakage from Filtered Tips or uneven liquid handling between Filtered Tips	Air leakage on the Filtered Tip	Swap the air-leaked Tip with new one
Blockage of tips	Too much starting	Decrease the amount of starting material. Use the

	material causing clumps or aggregates	recommended amount of starting material as listed in the Reagent Kit manual (Handbook).

DNA Quality Problems		
Problem	Cause	Solution
Low DNA yield	Incomplete lysis	Decrease the amount of starting material used.
		Be sure to add Proteinase K during lysis, if included in the protocol.
		Make sure that the sample is completely immersed in the Lysis Buffer.
	Poor quality of starting material	Be sure to process sample immediately after collection or store the sample at appropriate temperature. The yield and the quality of DNA isolated depend on the starting material.
	Insufficient amount of magnetic beads added	During shipping, some magnetic bead solution may adhere to the sealing foil of the cartridge. To collect any bead solution from the foil, tap the cartridge to deposit the bead solution at the bottom of the well.
	Clogged Tips resulting in DNA loss	Ensure that the lysate does not contain any particulate material that can clog the tip sprout. If needed, centrifuge the sample prior to the MagPurix purification.
No DNA recovered	Magnetic beads stored or handled improperly	Store cartridge containing the beads at room temperature.
		Do not freeze the cartridge as the beads may be irreparably damaged.
		Make sure that the beads are in solution at all times and do
		not dry. Dried beads are non-functional.
Eluate containing DNA is discolored	Magnetic beads present in the eluate	Remove any magnetic beads using a magnetic separator or centrifuge the sample in a microcentrifuge for 1 minute at maximum speed.
	DNA contaminated with heme	Minimize the amount of blood or blood-stained sample used (≤ 20 µl blood spot for forensics sample).
DNA is sheared or degraded	Bubbles formed during mixing steps	To prevent bubble formation during mixing, make sure the sample volume is at least the recommended volume listed in the manual supplied with Reagent Kits.
	Purified DNA repeatedly frozen and thawed	Aliquot purified DNA and store at 4°C (short-term) or -20°C (long-term). Avoid repeated freezing and thawing.
	DNA contaminated with DNases	Maintain a sterile environment while working (i.e. wear gloves and use DNase-free reagents).

5 Specifications

The T-Pro Auto 12t system

Model	**T-Pro Auto 12t**
Instrument Type:	**Benchtop nucleic acid extractor**
Sample Processing:	**1 to 12 samples per batch**
Sample Volume Handling:	**100 - 1200 uL**
Processing Time:	**See purification kit manual for details**
Heat Block Temperature:	**60°C to 70°C (assuming the room temperature of ~25°C)**
Protocol Input:	**Barcode Reader**
Built-in Features:	**LCD Display Screen**
Instrument Dimensions:	**48 cm W x 70 cm D x 52 cm H**
Weight:	**45 kg**
Input Power:	**AC 100-240 V, 240 VA, 50/60 Hz**
Operating Temperature:	**10-40°C**
Operating Humidity:	**30-80%**

CE

LV directive (73/23/EEC)

EMC directive (89/336/EEC)

EMC

EN61326-1

Safety

EN60101-1

APPENDIX

■ Replacement/Optional Parts

Item	Q'ty	Parts No.
Barcode Reader	1	A01001
Power Cord	1	A01002
Sample Rack	1	A01003
Filttered Tip	38	A02001
Sample Tube	38	A02002
Elute Tube	38	A02003

■ Product Guarantees

- The guaranty period shall be one year from the delivery of the product.
- Any part which fails to function properly under normal use, provided that all warnings and cautions in this manual are observed, during the guarantee period will be repaired by the Ji-Feng Biotechnology CO., LTD. free of charge.
- If the problem is due to the causes listed below, some charge may be applied for the repair even within the guarantee period.
    - ■ Any failures due to improper use or that are affected by other devices except for those approved by the Ji-Feng Biotechnology CO., LTD.
    - ■ Any malfunctions or damages during transportation or due to dropping of the product by a user.

About Services

Before you ask for device repairs, refer to “4 Troubleshooting” to check the problems. If the problems cannot be solved, contact your local representative, or the relative customer support.

Notes for Transporting / Shipping the T-Pro Auto 12t system

When transporting/shipping the T-Pro Auto 12t system to a new location, perform the following tasks:

Warning:

- Before carrying the T-Pro Auto 12t system, disconnect the plug from the outlet. If the power cable is damaged, this may cause a device failure, fire, injury, or electric shock.
- When transporting/shipping the T-Pro Auto 12t system, be sure to perform the following tasks:

  Remove all attached parts (Sample Rack, Barcode Reader) from the T-Pro Auto 12t system.
- After completing the above tasks, pack the T-Pro Auto 12t system in its original shipping box or some other equivalent box.